

## Literature

Karg, W. 1993: Acari (Acarina), Milben. Parasitiformes (Anactinochaeta) Cohors Gamasina Leach. Raubmilben (2nd rev. ed.). — Tierwelt Deutschlands 59. 523 pp. Gustav Fischer Verlag, Jena. ISBN 3-334-60445-4.

The revision of the only available source for identification of European gamasid or mesostigmatid mites is really welcome. This review includes criticism of details and some of the scope and general realization of the book, but as a whole the book will be very useful to any specialist on these mites. The additional work for the second edition has been quite extensive.

The title of the book is very long and somewhat confusing, but very German. The title "Raubmilben, Anactinochaeta: Gamasina" would have been enough, and the history of the nomenclature of different hierarchical groups could have been briefly discussed in the preface.

*General section.* The general section has been only slightly modified, although its contents deviate widely from those of the usual identification guide. The first edition was written to fit the requirements of a research institute for applied biology in the former GDR. Consequently, the importance of a group for applied biology should be argued thoroughly. The circumstances in the GDR were also reflected in the methodological section, while many details of the general section could have been handled differently, if the first edition had been made in the FRG.

The taxonomic delimitation of the book is not practical for those working on Gamasida in general. As the other recent volume (67) of Tierwelt Deutschlands by the same author deals with the only remaining large cohort Uropodina, the inclusion of the approx. one dozen species in the two small cohorts Sejina and Antennophorina would have caused much less work (1%) than the inclusion of almost 400 gamasine species described after the first edition. The exclusion of the parasitic species of Dermanyssoidea has been done more or less randomly, but this may be due

to the fact that strictly parasitic mites are excluded from the interests of many specialists on free-living mites.

The geographic delimitation of the work is defined in detail in the preface, but the actual inclusion of described species from different parts of Europe is inconsistent. Many species occurring only to the south of Hungary have been included. Species described from southern Finland have been excluded, although species living only in northern Sweden have been included.

The first chapter, "Diagnoses for Gamasina", would best fit the beginning of the special section.

The second chapter, "State of research and information", has been carefully rewritten and is informative. Several recent revisions have been listed and also taken into account in the special section, but the commonest source of errors in them, in this book, and especially in the recent revision of Uropodina by Karg — i.e. widescale neglect of checking of the types of Berlese and Oudemans — has not been noted. The Canadian acarologist, Lindquist, is cited as British, and the orthography of the name of the colleague from the neighbouring country, Halašková, includes three errors on p. 11 and throughout at least two errors.

In the third chapter, "Systematics of the main groups", the five main groups in the general section have been taken directly from the first edition, although their content in the special section is different for some groups (exclusion of Epicriidae from the scope of the book, although included with Phytoseioidea in the special section!). The system of Gamasina has been very vague even in postwar European books and articles dealing with these matters. Against this background, the de-

limitation of superfamilies, families, and subfamilies by Karg in this book is amazingly close to the system accepted by many authors of today. The system for Phytoseioidea and Ascoidea includes the most conflicting opinions, but the general disagreement between various authors is also greatest in the case of these groups.

The fourth and fifth chapters: "Body morphology and taxonomic characters" and "Reproduction and development" are standard parts for this kind of book. Personally, I had expected many more SEM-micrographs of morphological details, as SEM has obviously been available during the work for the second edition.

The treatment of parthenogenesis in Gamasina is unsatisfactory. Even the frequency of totally parthenogenetic species has not been mentioned in the general section, and many groups known to be more or less totally parthenogenetic in Central Europe have only obscure notes about the possibility of parthenogenesis in the special section. The role of parthenogenesis in peripheral populations, in cosmopolitan species, and its evolutionary significance have not been discussed at all.

The sixth chapter, "Biology and ethology", takes up six pages of small-size text and includes, in addition to general information, also scattered but interesting details of the habits of single species, seemingly observations by the author himself. The last part of this chapter, "Phylogeny and ecology of Gamasina" begins with an odd hypothesis claiming an aquatic origin for these mites. The review of habitat selection of different groups in the general section is much better and more consistent than the corresponding information at species level in the special section of this book. This chapter has been simply copied from the first edition, and no information about, e.g., Epicriidae has been included.

The seventh chapter, "Methodology", is evidently a description of the methods and equipment used by the author in the GDR. The order of listing of the field methods is certainly not that of usual acarological work, but again it must be remembered that his acarology work has been done at an agricultural research institute. Under laboratory methods, potassium hydroxide has been listed as the primary clearing medium instead of the much more practical lactic acid; and

the use of SEM has not been mentioned at all, although it is one of the basic methods of taxonomic analysis in modern acarology.

The microphotographs in the general section are mainly from the first edition and some of them are not of the quality necessary for this kind of book (e.g., Fig. 1a, 13b & c, 26c & d). Neither are the relatively few SEM-micrographs excellent throughout, although obviously taken by technicians.

*Special section.* The second edition adds several taxonomic and nomenclatorial changes to the first edition, and also new taxa, but these changes have been listed neither in the general nor in the special section. Argumentation of most of these details is not discussed here, as there is still a lot of disagreement among specialists. The main function of the special section is the listing of known taxa, keys, and detailed figures of important characters for identification of Central European Gamasina. My criticism of the special section naturally emphasizes groups that I am personally most familiar with. For this reason I almost totally omit comments concerning the large nominate subfamily of Phytoseiidae, but this group has been one of Karg's main interests, and his work in this group would be expected to be of high quality.

Karg does not mention the possibility of structural intrapopulational or geographical variation in many cases where this variation is actually very widespread, and concerns even the most striking characters (sternal plates and setation of Epicriidae and setal length of many Zerconidae). The presence of structural noncontinuous polymorphism (e.g., in Zerconidae) in Gamasina seems to be unknown to Karg.

The first chapter, "The keys", is among the best parts of this book. The presence of separate keys for adults, nymphal stages, and even for "Gangmerkmale" is quite practical and helps beginners in the identification of various groups. I have only superficially tested the utility of the main keys, but they seem to be better than the long keys found in many books for the identification of different groups of arthropods.

The second chapter: "Description of families with keys to genera and species, including autecology of the species" changed the format of the presentation. Information about habitat and

range now immediately follows the name of the species in the key for species. The format of the first edition with a separate list of species and the above information at the end of the discussion of each genus was more convenient to the reader, although the new format will save some space.

The information about habitat selection and especially range is still very inconsistent, and it is really difficult to know which of the species bearing the information "Europa" are widespread and which of them have been probably found in only a few localities close to each other in one country. Sometimes numerous localities have been listed just for Hungary for a species that is very common throughout the area treated in this book; sometimes crucial new information about the range or habitat has simply been omitted.

The drawings are generally good, but their selection is quite inconsistent. If the dorsal habitus is presented for one species and a small detail, e.g., the tectum for a related species, and possibly a further detail for a third species, the drawings are

not helpful to the average user. It is obvious that the number of drawings must have been restricted by the publisher — but why are the drawings that are lacking almost without exception of species that were not included in the first edition?

There are numerous small errors that do not need to be separately listed. Many of them, however, are confusing, as on p. 78 two species of *Hypoaspis* (different superfamily!) are listed as "Dorsalseite von Larven der Eviphidoidea".

Some omissions are especially irritating for Northern European readers. New species recorded by Lundqvist & Johnston (*Zercon lindrothi*), and Huhta (*Dendrolaelaps saprophilus*) have not been included, although the former deals with a widespread European species.

This book is quite useful for specialists of Gamasina, but less serviceable for the largest group of possible users: ecologists who need information about the dominant or common species of different habitats.

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